

ProSe (e.g. D2D) connections/communications. In a network-controlled ProSe (e.g. D2D) connections/communication, network assistance is available at/for both UE#1 and UE#2 in the examples of FIGS. 1 and 2 (the corresponding connections to UE#1 and UE#2 in FIGS. 1 and 2 are present or operable), i.e. both UE#1 and UE#2 are in CONNECTED state and thus capable of receiving direct control from the serving/controlling network (i.e. network assistance) for/when conducting the ProSe (e.g. D2D) connection. In a semi-autonomous ProSe (e.g. D2D) connections/communication, network assistance is available at/for only one of UE#1 and UE#2 in the examples of FIGS. 1 and 2 (only one of the corresponding connections to UE#1 and UE#2 in FIGS. 1 and 2 is present or operable), i.e. only one of UE#1 and UE#2 is in CONNECTED state and thus capable of receiving direct control from the serving/controlling network (i.e. network assistance), while the other one of UE#1 and UE#2 is in IDLE state and/or outside the service/coverage area of the serving/controlling network (i.e. the controlling network entity) and thus incapable of receiving direct control from the serving/controlling network (i.e. network assistance), for/when conducting the ProSe (e.g. D2D) connection. In a (fully) autonomous ProSe (e.g. D2D) connections/communication, network assistance is available at/for neither one of UE#1 and UE#2 in the examples of FIGS. 1 and 2 (none of the corresponding connections to UE#1 and UE#2 in FIGS. 1 and 2 is present or operable), i.e. both UE#1 and UE#2 are in IDLE state and/or outside the service/coverage area of the serving/controlling network (i.e. the controlling network entity) and thus incapable of receiving direct control from the serving/controlling network (i.e. network assistance) for/when conducting the ProSe (e.g. D2D) connection.

[0044] The LISA according to exemplifying embodiments of the present invention may be realized/implemented by any local entity, i.e. any communication-enabled entity which is located within the proximity service range of at least one device to be intercepted among the two devices in the targeted D2D connection. On the one hand, the LISA may be realized/implemented by a device capable of conducting a connection of a proximity service with the at least one device to be intercepted, i.e. participating in a ProSe (e.g. D2D) connection with UE#1 and/or UE#2 of FIGS. 1 and 2. Such device may for example comprise any suitable UE, terminal, machine, peer, or the like. On the other hand, the LISA may be realized/implemented by a deployed network node which may be pre-configured to act as LISA. Such network node may for example comprise any suitable access point, small-cell eNB, dedicated LISA device, or the like. Utilizing a network node as a LISA may provide benefits in terms of controlling and data forwarding, especially when the network node already has a working connection/interface in place with the serving/controlling network (e.g. a S1 or X2 connection/interface via the serving/controlling eNB), while utilizing a local device (e.g. a local UE) as a LISA may provide benefits in terms of flexibility (e.g. in tracking/following the devices in D2D connection).

[0045] According to exemplifying embodiments of the present invention, certain network nodes may be deployed and pre-configured (pre-coded) to act as LISA over certain service areas on a sufficiently fine location-resolution basis. In such scenarios, the serving/controlling network is aware of those local network nodes being pre-configured to act as LISA over a certain ProSe service area beforehand, and may thus select and active one or more LISA among these pre-

configured (pre-coded) network nodes accordingly. That is a semi-/static LISA configuration may be utilized.

[0046] According to exemplifying embodiments of the present invention, irrespective of the presence or absence of any pre-configured (pre-coded) network nodes as mentioned above, devices such as UEs may be dynamically utilized as LISAs over certain service areas. In such scenarios, the serving/controlling network may select and configure one or more devices such as UE to act as LISA among the available devices (as well as de-select and release previously selected and configured devices when their LISA operation is no longer needed or suited for the targeted D2D user or users) on-the-fly. That is a dynamic LISA configuration may be utilized.

[0047] According to exemplifying embodiments of the present invention, a device or network node acting as cluster head of a D2D cluster may be determined/selected to act as LISA. Namely, multiple devices, such as devices being capable of a mutual D2D connection/communication, may be (virtually/logically) organized in a D2D cluster, and a device or network node (e.g. a device of the devices in the D2D cluster) may act as D2D cluster head. Such D2D cluster head may be preconfigured as a LISA or with LISA capabilities so as to be able to act as D2D cluster head and LISA for the same (subset of) devices in the D2D cluster at the same time. While not being restricted thereto, such linkage of D2D cluster head operation and LISA operation at a single device or network node may be specifically applicable for semi-autonomous ProSe (e.g. D2D) connections/communications and (fully) autonomous ProSe (e.g. D2D) connections/communications, as explained above.

[0048] FIG. 3 shows a diagram illustrating a first example of a procedure according to exemplifying embodiments of the present invention.

[0049] As shown in FIG. 3, a procedure according to an exemplifying embodiment of the present invention comprises, at the controlling network entity side, an operation of performing (or carrying out, executing, etc.) control in relation to a connection of a proximity service between at least two devices, e.g. UE#1 and/or UE#2 of FIGS. 1 and 2, an operation of determining at least one LISA located within the proximity service range of at least one device to be intercepted among the at least two devices, and an operation of controlling the determined at least one LISA to perform (or carry out, execute, etc.) an operation relating to lawful interception and/or security in relation to the connection of the proximity service. For such control operation, corresponding control information are transmitted to the at least one LISA, i.e. to the local device/s and/or the local network node/s determined to act as LISA for the targeted ProSe (e.g. D2D) connection.

[0050] As shown in FIG. 3, a procedure according to an exemplifying embodiment of the present invention comprises, at the LISA side (i.e. the local device/s and/or the local network node/s determined to act as LISA for the targeted ProSe (e.g. D2D) connection), an operation of obtaining, from the controlling network entity, i.e. the network node in charge of control in relation to a connection of a proximity service between at least two devices, control information for performing (or carrying out, executing, etc.) an operation relating to lawful interception and/or security in relation to the connection of the proximity service, and performing (or carrying out, executing, etc.) the operation relating to lawful interception and/or security in relation to the connection of